

REMARKS

Claims 27-31, 37 and 45-47 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Sopko et al. '601 (U.S. Patent No. 4,022,601) in view of Hashizume '817 (U.S. Publication No. 2001/0031817) and Gerhardinger et al. '199 (U.S. Patent No. 5,714,199). The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

Sopko et al. '601 disclose a method and apparatus for coating a glass substrate, but as the Examiner acknowledges, the citation is concerned with deposition of a vaporized pyrolyzable organometallic salt material onto an upper surface of the glass substrate using vaporization nozzles, whereas each of the rejected claims is concerned with the deposition and curing of a thermosetting powder on such a surface. However, as the Examiner points out, Sopko et al. '601 use infra-red heating of the other side of the glass substrate from the vaporization nozzles (the under-surface) for the purpose of reducing warpage of the glass. Reduction of warpage is the sole purpose advanced by Sopko et al. '601 for use of the infra-red heating of the under-surface of the glass substrate. The Examiner takes the position that:

... heating the substrate from the opposite side of the vaporization nozzles would also result in an even coating of the deposited material due to the reduction of warpage thereby reducing the defects within the coating (i.e. uneven coating of material). [paragraph 3, lines 5-9 of Detailed Action]

But there is no reference by Sopko et al. '601 to the heating of the substrate from the opposite side affecting evenness or other quality of the coating. The only reference by Sopko et al. '601 to the quality of the coating produced by the vaporization nozzles 64, is to improved durability resulting from use of the heat source 80 above the glass (column 3, line 16). The effect of heating the under-surface of the glass is contrasted with this (column 3, line 17) as reducing glass warpage, and is emphasized strongly as being independent of the formation of the coating above. In the latter regard, attention is directed to the paragraph between lines 18 and

26 of column 10 of the Sopko et al. '601 disclosure where three possibilities are set out drawing distinction of purpose between heat applied from above and heat applied from below; see especially the distinction of purpose between items (2) and (3) of that paragraph.

Accordingly, the position taken by the Examiner in the passage quoted above, as to the effect of heating the under-surface of the glass is, with due respect, purely speculative. Accordingly, the Applicant requests that in the event that the Examiner's view expressed in the quoted passage is maintained or continued in a further rejection of claims of this application, the Examiner should enter a sworn declaration in support of the position taken so that Applicant can then enter suitably-contrary evidence.

The Examiner acknowledges that Sopko et al. '601 is silent concerning deposition and curing of a thermosetting powder material and in referring to Hashizume '817 in paragraph 4 of the Detailed Action, alleges that:

... one of ordinary skill in the art, due to environment considerations would have known to modify the process by involving the present composition. [paragraph 4, lines 7-8, page 4 of the Detailed Action]

This allegation (with the understanding that "present composition" in this context refers to the powder coating composition taught by Hashizume '817) raises issues that are contested by the Applicant.

Firstly, the Applicant contests the fundamental issue of the allegation that it would have been obvious to one of ordinary skill in the art to modify the Sopko et al. '601 method to deposit a coating of thermosetting powder as taught by Hashizume '817 in place of a coating of vaporized pyrolyzable organometallic material as disclosed by Sopko et al. '601. Clearly, this hypothetical 'modification' would require very significant and sweeping change of the Sopko et al. '601 method and apparatus. More particularly, the 'modification' would require:

(a) the Sopko et al. '601 coating chamber 12 with its vaporization nozzles 64 and including it's vacuum hoods 38 and 40 and other equipment, to be replaced by an electrostatic powder spraying unit (as used by Hashizume '817) or some other appropriate means of depositing the powder; and

(b) omitting the heat source 80 above the glass since the temperature at which deposition of the powder on the substrate takes place would need to be significantly lower than the temperature (some 566 degrees Centigrade – see Sopko et al. '601 column 6, lines 27-29) at which the pyrolytic oxide coating is produced by Sopko et al. '601 – it is to be noted in this connection that as taught by Hashizume '817, baking of the thermosetting powder takes place "preferably 170 to 230 degrees Centigrade" (Hashizume '817 paragraph [0028], line 7).

These steps (a) and (b) in themselves amount to mutilation of what is taught by Sopko et al. '601 and are entirely destructive of that teaching. In particular, the provision of the heater 80 is of the essence of the Sopko et al. '601 teaching in achieving the durable coating that Sopko et al. '601 set out to obtain in eliminating the limitations of the prior art pyrolytic oxide coating process (column 2, lines 25-27). Dispensing with the equipment for pyrolytic oxide coating takes away all reason for the Sopko et al. '601 disclosure and removes any relevance of the heater 80.

Thus, contrary to the relevant case law, "the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the primary reference [in this case Sopko et al. '601] as well as a change in the basic principle under which the primary reference [Sopko et al. '601] construction was designed to operate." *In re Ratti*, 270 F.2d at 813, 123 USPQ at 352. According to this precedent, the Applicant contends that the

'modification' proposed by the Examiner is clearly not appropriate to invalidate claims 27-31, 37 and 45-47.

Moreover, the 'modification' proposed by the Examiner, if carried out, removes any relevance of the under-surface heaters 108 or corresponding infra-red heaters. The hypothesis advanced by Sopko et al. '601 for under-surface heating of the glass substrate is that there is cooling of the top-surface when vapor-deposition of the pyrolytic oxide coating takes place, and that "[h]eating the bottom surface 112 of the glass ribbon makes it pliant and the glass ribbon slumps under its own weight thereby minimizing or eliminating the glass ribbon warpage." [column 10, lines 15-17]. But this is in the context of the top-surface of the Sopko et al. '601 glass surface being at a temperature of at least 566 degrees Centigrade (column 6 lines 27-29) which is more than double any temperature required for baking the Hashizume '817 thermosetting powder (paragraph [0028], lines 6-8). Thus, if the Sopko et al. '601 process and apparatus were to be modified "by involving the present composition" as proposed by the Examiner, the heating of the "bottom surface 112 of the glass ribbon" as taught by Sopko et al. '601 for reducing warpage of the glass would be without purpose (and probably counter-productive). The much lower temperatures at which the powder coating would be deposited and baked would not affect the upper-surface of the ribbon or substrate in the way Sopko et al. '601 experience, and heating the under-surface to make it pliant would be undesirable and indeed might well result in warpage (the precise drawback that the under-surface heating is intended to eliminate).

Accordingly, it is submitted that even if the skilled person were to adopt the 'modification' proposed by the Examiner, the under-surface heating used by Sopko et al. '601 would not be retained since this would have no apparent beneficial effect in relation to deposition of powder on the top-surface of the glass substrate. Indeed, because of the much lower temperature involved in adoption of the powder-coating technique instead of the elevated temperature

involved in the vapor-deposition of the pyrolytic oxide coating, the skilled person would recognize that under-surface heating would be neither necessary nor desirable and could induce warpage rather than correct for it. There is nothing taught by Sopko et al. '601 that would deter the skilled person from rejecting under-surface heating of the glass substrate, rather there is much to incite rejection of it.

It is submitted therefore that even if the skilled person were to 'modify' the Sopko et al. '601 process and apparatus to adopt the Hashizume teaching of deposition of powder-coating material, the resultant process and apparatus would not be in accordance with the limitations recited in claims 27-31, 37 and 45-47 of the present invention. The Hashizume '816 teaching does not involve heat applied to cure the thermosetting powder by transmission of the heat through the glass substrate, as recited by independent claims 45 and 47.

However, it is submitted that the art with which Hashizume '816 is concerned is very different technically from that with which Sopko et al. '601 is concerned. Both Hashizume '816 and Sopko et al. '601 are concerned with establishing a coating on a substrate, but the coating materials are significantly different in the two cases and the techniques used are very different to the extent that the person skilled in the art considering the Sopko et al. '601 vapor-deposition process and apparatus would immediately understand that that process and apparatus, and the techniques and temperatures adopted for them, would not be applicable for producing a coating of thermosetting powder. Such a skilled person would accordingly not seek to 'modify' the Sopko et al. '601 process and method in the way proposed by the Examiner, and it would take invention to do so.

The Examiner advances environmental considerations as the motivation for the skilled person to make the proposed 'modification' of the Sopko et al. '601 process and apparatus. But if the skilled person is aware of the Hashizume '817 technique of coating using thermosetting powder as advantageous environmentally over the Sopko et al. '601 process and

apparatus, it must be asked why would the skilled person proceed by radical 'modification' of the Sopko et al. '601 process and apparatus to adopt the Hashizume '817 teaching? It is submitted that the skilled person rather than seeking to use the Sopko et al. '601 process and apparatus and to 'modify' it in the extensive way required for thermosetting-powder coating, would more simply and directly adopt the Hashizume '817 (or Gerhardinger et al '199) teaching. The less environmentally advantageous Sopko et al. '601 process and apparatus contains nothing of any explicit or implicit relevance to powder coating, and for this reason would clearly be discarded.

The Examiner states in paragraph 7 of the Detailed Action that:

... All of the elements were known within the art. The only difference is a single disclosure containing all of the presently claimed elements. The Courts have made it clear that the teaching, suggestion, or motivation test is flexible and an explicit suggestion to combine the prior art is not necessary. The motivation to combine may be implicit and may be found in the knowledge of one of ordinary skill in the art, or in some cases, from the nature of the problem to be solved. ...

But in the present case, the requirement of each of the independent claims 45 and 47 of the application for the application of heat to the thermosetting powder by transmission of the heat through the glass substrate to cure the thermosetting powder is not known from either Sopko et al. '601 or Hashizume '817, or (as previously accepted by the Examiner) Gerhardinger et al '199. The Sopko et al. '601 heat source beneath the glass has the function of heating the bottom surface 112 of the glass ribbon to make it pliant in order to eliminate or minimize glass ribbon warpage (column 10, lines 14-17). It does not apply heat to thermosetting powder by transmission of the heat through the glass substrate as recited in independent claims 45 and 47. More especially, adopting the terms of the precedent cited by the Examiner, no "suggestion [that] may be gleaned from the prior art as a whole", to motivate, nor is there any "improvement

that is technology-independent" and nor would "the combination of references result in a product or process that is more desirable".

It is submitted with due respect that fundamentally no objective reason to combine the teachings of the cited references has been put forward, and that therefore a *prima facie* case of obviousness has not been established [*In ex parte Levengood* 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)].

In all the above circumstances, the Applicant respectfully submits that each of the claims 27-31, 37 and 45-47 of the application is patentable over the cited art of Sopko et al. '601, Hashizume '817 and Gerhardinger et al. '199.

Claim 32 is rejected, under 35 U.S.C. § 103(a), as being unpatentable over Spoko '601 in view of Hashizume '817 and Gerhardinger et al. '199 and further in view of Horinka et al. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

Claim 32 of the application is dependent through claim 29 on claim 45, and accordingly includes all the limitations of claim 45, and is submitted to be, like claim 45, distinguished patentably from Spoko '601 in view of Hashizume '817 and Gerhardinger et al. '199 as argued above. It is submitted that the disclosure of Horinka et al adds nothing material to change that distinction.

The new independent claim 49 includes all the limitations of claim 45, and it is submitted therefore that this new claim like claim 45 is patentable over Spoko '601 in view of Hashizume '817 and Gerhardinger et al. '199 as argued above.

Claims 33-36, 38, 40-44 and 48 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Sopko et al. '601, Hashizume '817, Gerhardinger et al. '199 and further in view of Boucher et al. '466 (U.S. Patent No. 3,549,466) and Storrs '964 (U.S. Patent No.

1,988,964). The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

In this regard, claims 33-36 and 38 are each directly or indirectly dependent on claim 45, and so, it is submitted, are each as argued above in relation to claim 45, patentably distinguished from the cited art. Neither Boucher et al. '466 and Storrs '964 adds anything of relevance to vitiate the above arguments for patentability of claim 45.

Furthermore, it is submitted that claims 40-44 and 48 are each distinguished from the art cited against them, and that claims 33-36 and 38 are further distinguished from that cited art, in that there is no disclosure of all the features of the invention they claim. This assertion is accepted by the Examiner in paragraph 17 on page 8 of the Detailed Action, but the Examiner follows acceptance of this by characterizing Boucher et al. '466 and Storrs '964 as "teaching references" in respect of the concept of "... metal foil and an inward extension in order to yield an edge seal feature that is capable of providing dual pane glazings protection from moisture, dust, and dirt and in combination with the primary reference discloses the presently claimed invention." Following this, the Examiner identifies Boucher et al. '466 as disclosing, "the use of metal edge seals on a transparent assembly" and Storrs '964 as disclosing, "a metal edge strip as holding means that forms inward extensions."

However, it is to be noted that the teaching by Storrs '964 concerning "a metal edge strip" is limited to the edge binding 16 of Figure 2, which is identified on page 2, within lines 56-67 simply as "a metal strip held on by friction or otherwise" [the Storrs '964 edge bindings 35 and 46 of Figures 4 and 5 respectively are referred to in unspecific terms on page 3, lines 15-17 and 30-31, and the item 52 of Figure 6 is described on page 3, lines 52-68 as a "metallic molding" as distinct from a metal strip]. The Applicant respectfully contends that there is nothing taught by Storrs '964 concerning the extent to which their "metal strip" is to extend from the edge. As such, the "teaching references" provided by Boucher et al. '466 and Storrs '964

do not teach anything relevant to the limitation of claim 40 of the application which recites that, "... the metal foil extends inwardly only partially across the back surface from the edges by a distance within the range of 100 – 150 mm for reduction of thermal stress in the glass substrate."

Moreover, the "teaching references" of Boucher et al. '466 and Storrs '964 do not teach anything going beyond the "metal strip" being "held on by friction or otherwise" to the surface of the glass itself. Although the "or otherwise" may extend to adhesion to the glass surface, there is no teaching relevant to the further limitation of claim 40 of the application that the metal foil is "... bonded to a back surface of the thermosetting powder coating [of the glass]."

Accordingly, it is submitted that the cited references provide no teaching as to the above two limitations of claim 40 of the application, one relating to the specific range of extension of the foil from the edge for reducing thermal-stress of the glass substrate, and the other the bonding of the foil to the powder coating on the glass (rather than to the glass itself), which distinguish the powder-coated glass product of claim 40 from the cited art. The fact that the limitations of the claims of bonding the foil to the coating rather than to the glass, and the fact that the limited extension of the foil onto the coating rather than the glass results in thermal-stress relief to the glass is surprising and clearly not an obvious outcome from what is taught by the cited references. In these circumstances therefore, it is submitted that the powder-coated glass product is clearly patentable over the cited art.

It is notable that the property of thermal-stress relief by use of foil is not advanced in any of the cited art to provide motivation towards adoption of the teachings of the "teaching references". Amendments of claims 40 and 48 are being made to give greater emphasis to this quality attributable to the invention.

Each of claims 41-44 is dependent directly or indirectly on claim 40 and are therefore correspondingly also believed to be patentable over the cited art.

Claim 48 of the application specifies a spandrel panel that includes the features of (a) metal foil bonded to the back surface of a thermosetting powder coating on a glass substrate, and (b) extension of the foil inwardly from edges of the coating by a distance of between 100 – 150 mm for reduction of thermal stress in the glass substrate. Thus, it is submitted that the panel of claim 48, like the product of claim 40, is patentable over the cited art.

Furthermore, each of claims 33-36 and 38 (which as already submitted above are patentably distinguished from Sopko et al. '601, Hashizume '817 and Gerhardinger et al. '199, through their dependency on claim 45) include the features (a) and (b) identified in relation to claim 48, or in the case of claim 34 feature (a) and a more limited form of feature (b). Accordingly, the patentability of each of claims 33-36 and 38 is confirmed further.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejections or applicability of the Sopko et al. '601, Hashizume '817, Gerhardinger et al. '601, Hashizume '817, Horinka et al., Boucher et al. '466 and/or Storrs '964 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

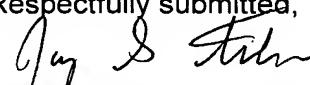
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In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,


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